A newsletter of the Local Technical Assistance Program (LTAP)

Issue Number 46, Spring 1995

Bulletin

Transportation Plans in Washington

by George D. Crommes, P.E.

Foreword

There are numerous transportation plans of various types used in Washington State. Some plans are made by the local agencies, others by the regional or state agencies. All existing plans are required by either federal, state, and/or local laws and regulations.

A few of the major key transportation plans are briefly discussed. This overview is meant to acquaint the reader with the various plans all of which impact their own communities.

State Transportation Policy Plan

This plan as required by state law is prepared by the Transportation Commission and WSDOT. Transportation policies are given for six goal areas: (1) protecting our investments, (2) personal mobility, (3) transportation support for economic activity, (4) environmental protection and energy conservation, (5) working together, and (6) transportation finance.

Transportation policies are developed yearly by "Issues Groups." Such policies are then approved by a steering committee made up of all major transportation interests in the state. The plan fulfills the requirements of RCW 47.01.071(3) and RCW 47.06.030 and is submitted to the legislature by the Transportation Commission each year.

Statewide Multimodal Transportation Plan

Required by state law (RCW 47.01.071(3) and RCW 47.06.040) and by the Intermodal Surface Transportation Efficiency Act (ISTEA), this plan is an executive summary of several planning efforts.

The plan consists of service objectives which define desirable service levels for state owned transportation modes and for modes in which the state has an interest, e.g., intercity passenger rail and aviation, et al.

Providing a base for the Transportation Commission's biennial budget request to the legislature, the final plan will detail the revenues available to the service objectives for a 20-year planning period. The final plan is estimated to be completed by the end of 1995.

State Highway System Plan

This plan is part of the Statewide Multimodal Transportation Plan and defines the desirable levels of

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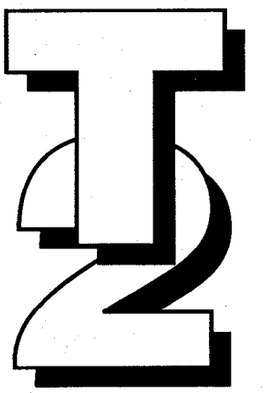

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performance and proposed strategies for the state highway programs. Strategies are defined for (1) maintenance, (2) preservation, and (3) improvements. Financial constraints include available revenues for 20 years.

The plan forms the basis for the Transportation Commission's biennial budget request for the legislature. Updated every two years by WSDOT, the plan is approved by the Transportation Commission.

State Ferry System Plan

Also part of the Statewide Multimodal Transportation Plan, the State Ferry System Plan defines service objectives for maintenance operations, preservations, and improvements for the state ferries. The plan, coordinated with regional transportation plans, is financially constrained within available 20-year revenues.

The plan is prepared by WSDOT and approved by the Transportation Commission, who submits it to the legislature with the biennial budget request.

Public Transportation Plan

Required by state law (RCW 47.06.110), this plan is part of the Statewide Multimodal Transportation Plan. WSDOT prepares it, the Transportation Commission approves and sends it to the legislature. The purpose of the plan is to: (1) comply with state law (RCW 47.06.050(2)); (2) to define state's interest and responsibility in public transportation; (3) to provide goals, objectives, and strategies for targeting state resources; and (4) to better coordinate the development and operation of all transportation modes. The next update is scheduled for 1997.

Intercity Passenger Rail Plan

As part of the Statewide Multimodal Transportation Plan, the Intercity Passenger Rail Plan by WSDOT recommends improvements to the rail service including depots, service extensions, and greater train speeds. Actions are recommended in coordination with public and private transportation providers. The plan is required per RCW 47.06.090 and is approved by the Transportation Commission. Next update is planned for the fall of 1995.

Freight Rail Plan

This plan is required by the Federal Railroad Administration to make the state eligible for Federal Local Rail Freight Assistance funding. The plan allows public review and comment to rail abandonment and preservation process. State law is RCW 47.06.080 and RCW 47.76.

The plan is approved by the Transportation Commission and submitted to the Federal Railroad Administration. The plan is part of the Statewide Multimodal Transportation Plan.

Marine Ports and Navigation Plan

As required by state law (RCW 47.06.070), this plan is part of the Statewide Multimodal Transportation Plan. It assesses the transportation needs of the state's marine ports, including navigation and identifies needs to support international trade and economic development. The plan is prepared by WSDOT and the Transportation Commission who submits it to the legislature.

Aviation Plan

This plan is part of the state-interest component of the Statewide Multimodal Transportation Plan. The Aviation Plan defines airport development needs statewide and the plan assists state and federal government in carrying out their legislative mandated responsibilities to promote aviation and aviation safety. The plan, prepared by WSDOT and the Transportation Commission, is continually updated.

The main components of inventory, demand forecasts and facilities plans are updated every two to three years.

Bicycle Transportation and Pedestrian Walkways Plan

The plan is prepared by the Transportation Commission and WSDOT. As part of the Statewide Multimodal Transportation Plan, the plan proposes statewide strategies for bicycle and pedestrian transportation and coordination efforts. Required per state law (RCW 47.06.100) and per federal regulations, the plan is approved by the Transportation Commission and sent to the legislature.

Regional Transportation Plans

These plans, required by RCW 47.80.030, define the regional transportation system within each Regional Transportation Planning Organization (RTPO). The plans coordinate local comprehensive plans required in RCW 36.70A with state transportation planning in RCW 47.06. Individual RTPO plans are approved by the RTPO Policy Board and submitted by them to WSDOT biennially.

Local Comprehensive Plans

Various counties and cities prepare comprehensive plans as per state law (RCW 36.70A.040). These plans include considerations and/or plans for land use, housing needs, capital facilities, utilities needs, and transportation. Counties include a rural element of lands that are not designated for urban growth, agriculture, forest, or mineral resources. The rural element permits land uses that are compatible with the rural character of such lands and provide a variety of rural densities. These plans are prepared for and approved by the county and city legislative authorities. Plans are submitted to the state's Department of Community, Trade, and Economic Development.

Free Publications

For Washington recipients only: Contact Laurel Gray at (360) 705-7386.

Rating Unsurfaced Roads — A Field Manual for Measuring Maintenance Problems, CRREL (1988)

This brief report provides the tools necessary to rate and evaluate unpaved roads. Prepared by the U.S. Army Cold Regions Research and Engineering Laboratory (CRREL).

Unsurfaced Road Maintenance Management, CRREL (1992)

After ratings are made of unsurfaced roads, the next steps are covered in this special report.

Highway Utility Guide (FHWA) (1993)

The guide "provides the state-of-the-knowledge on the better practices being employed and addresses the issues when highway and utility facilities share a common right of way."

Basic Metric System Participants Workbook, WSDOT (1994)

This booklet was used in WSDOT's training course. It provides an overview of the metric system. A Metric-English Converter is included.

Moving With Metric — Metricube FHWA (1994)

This foldable cube shows volume, temperature, mass weight, length, and other interesting facts on metric conversion.

Scrap Tire Utilization Technologies, NAPA

This booklet provides a succinct overview of various uses for scrap tires, barriers to implementation, and sample policy statements on solid waste management of waste tires used in Oregon.

State-of-the-Art Survey of Flexible Pavement Crack Sealing Procedures in the United States, CRREL Report 92-18, U.S. Army Corps of Engineers (1992)

Brief 20-page guide summarizes current methods and materials used by contractors and state departments of transportation for crack sealing on flexible pavements. Advantages and disadvantages are stated.

Roadside Improvements for Local Roads and Streets, FHWA

Brief, well illustrated guide shows low cost methods of improving and enhancing roadside safety. It is not a design manual.

Maintenance of Aggregate and Earth Roads, T^2 Center (1994 reprint)

The fundamentals.

Asphalt Seal Coats, T^2 Center (1994 reprint)

The fundamentals.

Concrete Pavement Repair Manual of Practice (SHRP-H-349) (1994)

Contains two manuals for use of highway maintenance people. Covered are the repair of joint seals and the state-of-the-art of rapid repair of partial depth spalls.

Asphalt Pavement Repair Manuals of Practice (SHRP-H-348) (1994)

Contains two pavement maintenance manuals for use on highway maintenance. Each is a compendium of good practices for asphalt concrete (AC) crack sealing and filling and pothole repair.

Local Low Volume Roads and Streets Manual, ASCE, FHWA, USFS (1992)

This well organized manual provides local agencies with basic information on planning, design, construction, and maintenance of local low volume roads and streets.

Geotextile Selection and Installation Manual for Rural Unpaved Roads, FHWA (1989)

A guidebook for selecting and installing geotextiles.

Guide to Safety Features for Local Roads and Streets FHWA (1992)

Booklet deals with the construction and maintenance practices that will lead to increased safety.

Planning, Design, and Maintenance of Pedestrian Facilities, FHWA (1989)

A text book on this subject.

Development of a Procedure to Rate the Application of Pavement Maintenance Treatment, SHRP (1992)

A partial printing of a completed SHRP product. This report uses decision trees and summarizes national practices.

Pavement Management Implementation in Washington's Counties and Selected Cities — A Progress Report

This brief report documents the results of a survey of Washington counties and cities by Grays Harbor County staff regarding pavement management systems, data collection, and use of this information.

In the News

Five Research Projects Were Started by WSDOT's Research Office

These are:

- Bus View — Graphical Display of Transit Coach Locations
- Fuzzy Neural Ramp Metering Algorithm Improvements
- North Seattle Advanced Traffic Management System
- PUSHME — Emergency Response Operational Test
- Stream Stability/Scour Expert System

One completed research report received by the Research Office was:

- Thin Polymer Bridge Deck Overlays. This report summarizes WSDOT's experience over ten years with epoxy and methacrylate thin polymer bridge deck overlays. (Available through WSDOT's Research Office at (360) 705-7974.)

Green Book Now in Metric

Comprehensive metric geometric design standards are now available in the just released 1994 edition of AASHTO's "A Policy on Geometric Design of Highways and Streets," commonly known as the "Green Book."

This edition uses only metric units. This change was a result of the Omnibus Trade and Competitiveness Act of 1988 which required each federal agency to convert to the metric system. The Federal Highway Administration established September 30, 1996 as the date for metrication of plans, specifications, and estimates for projects constructed with federal aid.

This required AASHTO to metricate geometric design standards, which are now complete and available in the 1994 edition of *A Policy on Geometric Design of Highways and Streets*. Copies are available from AASHTO for $50 for members and $62.50 for nonmembers, including postage and handling. Contact AASHTO, 444 North Capitol Street NW, Suite 249, Washington, D.C. 20001, phone (202) 624-5800, fax (202) 624-5806.

(Source: AASHTO Journal, January 20, 1995)

PIARC World Congress Scheduled

The Permanent International Association of Road Congresses (PIARC) will be holding the Twentieth World Road Congress on September 3-9, 1995, in Montreal, Quebec.

PIARC's world congress, held every four years, provides an opportunity for transportation experts from around the world to "foster progress in the formulation of road transport policies, planning, construction, improvement, and maintenance of roads and in the operation and management of road systems."

The meeting in Montreal will be centered around four topics with member countries providing national reports on:

- Improving Efficiency in Road Administrations
- Transportation and Urban Space Planning
- Achieving Quality in Road Works
- New Techniques for Pavement Strengthening and Maintenance

(Source: AASHTO Journal, January 20, 1995)

"Infrastructure Underinvestment Threatens Living Standards"

Chronic underinvestment in the nation's infrastructure "is threatening the national economy and living standards for all Americans" according to an investigation conducted by the former House Public Works and Transportation Committee.

The report was issued by Rep. Norman Mineta, Ranking Democratic Member of the House Transportation and Infrastructure Committee, who initiated the investigation last year when he chaired the former committee.

The report documents the decline in infrastructure investment:

1. Federal infrastructure investment declined from a peak of $43.9 billion in 1980 to $39.9 billion in 1992 (in 1990 dollars).
2. Investment as a percentage of all federal spending fell from 5.2 percent in 1980 to 3.0 percent in 1993.
3. Investment as a percentage of the Gross Domestic Product fell from 1.2 percent in 1980 to 0.7 percent in 1992.

Noting the effects of the decline in investment, the report states that "despite its overriding importance, major portions of our national highway system are in substandard condition,

severely impeding and inhibiting the economic growth and mobility increases that have been the hallmark of the system. Almost one-fourth of our highways are in poor or mediocre condition, while another 36 percent are rated only fair. One in five of the Nation's bridges are structurally deficient, meaning that weight restrictions have been set to limit truck traffic."

Inadequate conditions have raised vehicle maintenance and operation costs by 30 percent, the report states, while gridlock congestion conditions on interstates have cost the economy $39 billion.

Additional investments of $32 billion every year are needed, "to bring our highway systems up to standard." Investments of as much as $11 billion per year are needed to provide adequate transit service.

Several recommendations are made for changes in the nation's infrastructure investment strategy including:

1 Development of a national infrastructure investment strategy;

2 Adoption of a capital budget to set in place a process for decisions about infrastructure investments and operating expenses; and

3 Removal of the transportation trust funds from the unified budget, so that funding levels will be determined solely by the funds available from the dedicated user fees and not by arbitrary budget ceilings.

(Source: AASHTO Journal, January 20, 1995)

WSDOT Reorganization Plan Announced

10105.006

Secretary of Transportation Federico Pena announced the U.S. Department of Transportation's reorganization proposal, which would consolidate the department's 10 agencies into three: a new Aviation Administration; the U.S. Coast Guard; and a new Intermodal Transportation Administration.

Intermodal Transportation Administration — The formation of a new Intermodal Transportation Administration will incorporate the responsibilities of the following: the Federal Highway Administration; the Federal Railroad Administration; the Federal Transit Administration; the Maritime Administration; the National Highway Traffic Safety Administration; the Research and Special Programs Administration (for pipeline safety and hazardous materials responsibilities); and USCG bridge permitting. The agencies proposed to be consolidated in the new Intermodal Administration currently direct 94 percent of the department's national infrastructure investment. It is expected to oversee the merger of approximately 30 grant, loan, and subsidy programs.

Aviation Administration — This administration will oversee the functions currently performed by the Federal Aviation Administration, the Office of Commercial Space Transportation (OST), and certain domestic and international aviation functions now performed in the OST. The administration will handle aviation safety regulations and security. The department is proposing to move the air traffic control operations to an independent governmental corporation.

Coast Guard — The Coast Guard will maintain authority over maritime navigation, communication, and safety standards.

The consolidation proposal includes a number of additional changes in the department's activities. The Office of the Secretary will provide "strategic direction" for the department, and will oversee the research and technology, policy coordination, resource management and allocation, and internal relations for the three agencies. The operations of the department (facilities maintenance and accounting) will be delegated to entities outside the OST. In addition, the operations of the St. Lawrence Seaway Development Corporation, along with the operations of the FAA's air traffic control functions, will be transferred outside of WSDOT.

The placement of certain operations under the department's reorganization proposal have yet to be determined, including:

- Research and Technology — Resources would be distributed throughout the three component administrations of the department. Department-wide research and technology activity would be coordinated through a proposed office of transportation technology in OST.
- Bureau of Transportation Statistics (BTS) — Data functions currently performed by the BTS will be streamlined and coordinated, although formal reporting relationships have yet to be determined.
- Field Operations — The department will consolidate the regional structure and offices to "maximize one-stop shopping," and to facilitate relationships between state and local governments. Pena indicated that the second phase of the reorganization proposal will "assess existing field resources and customer needs to determine the best distribution of services in the field."

(Source: AASHTO Journal, Vol. 95, No. 5, February 3, 1995)

Maintaining Your Respirator

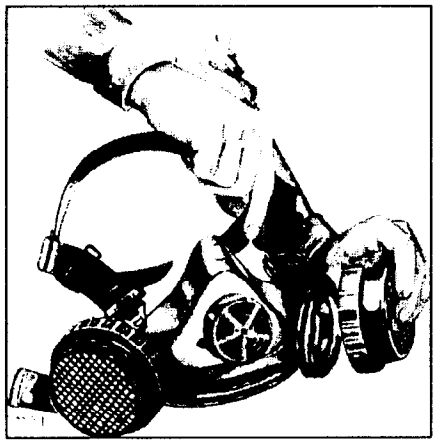
Each time you use your respirator, inspect it carefully before putting it on. Look for cracks, dents, or holes in the mask, and broken or worn straps or buckles. Elastic straps that have lost their stretch need to be replaced. You need a new respirator if the flexible material around the edges of the respirator has become hard and brittle because it will no longer provide a tight seal on your face. Valves must be clean and functioning properly. Dry or cracked valves should be replaced. Replace your disposable respirator when it becomes clogged or breathing becomes difficult.

Replace Filters

Check the cartridges or filters of your APR before each use. Are they changed according to company policy? Are they the right cartridges for your job? Remember, APR cartridges will filter out only the contaminants they were designed for. When replacing cartridges, be sure they are threaded properly and, of course, do pressure tests after replacing cartridges or filters.

Maintenance

Your respirator should be maintained by persons trained to do so. New valves, hoses, and other parts should be installed according to company policy or when they appear worn. Use only approved parts. Avoid exchanging parts from one model to another.



Change cartridges whenever your company's safety program recommends it. Use the right cartridge for the hazards you face and do pressure tests after replacing cartridges or filters.

Keeping It Clean

Clean your respirator after each use according to manufacturer's instructions. For most respirators, this means washing in mild soapy water and scrubbing with a soft brush if necessary. Rinse in clean, warm water and dry according to instructions. If sanitizing is necessary, leave the respirator in the recommended disinfecting solution for at least two minutes and rinse thoroughly. Never use solvents or harsh cleaning agents on rubber or plastic parts.

Storing It

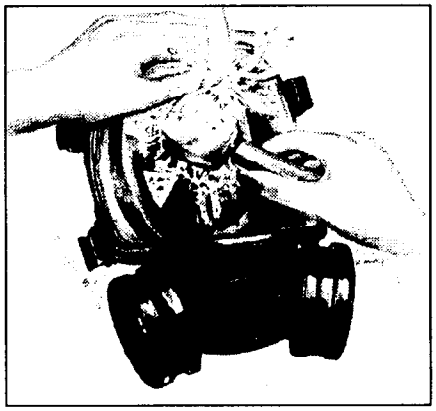
Sunlight and chemicals in the atmosphere can damage your respirator. Seal your thoroughly dry respirator in a plastic bag and store it away from direct sunlight. Avoid placing objects on top of it; if it loses its shape, it will not fit properly.

Be Alert

Your safety on the job depends on your ability to wear a properly functioning respirator and still do your job. Check with your supervisor if your respirator interferes with your ability to see, hear, or be heard properly, or if it restricts movement so that you cannot safely do your work. If you experience difficulty breathing, fatigue, irritation in your eyes or respiratory system, dizziness or illness, leave the work area immediately and report to your supervisor. These could be warning signs that your respirator is not working properly.

Your on-the-job respiratory health is guaranteed when you properly maintain, store, and use your respirator.

(Source: ©1991 PARLAY INTERNATIONAL 1200 026)



Most manufacturers recommend cleaning your respirator in mild soapy water. You may need to use a soft brush to scrub away contaminants.

Working Safely With Hand and Portable Power Tools

Hand tools and portable power tools may be a familiar part of your everyday work life. For this very reason, it's easy to forget that they can be dangerous if used improperly. For example, a simple screwdriver can slip and cause a puncture wound, and an ungrounded electric drill can cause a serious shock. You probably already know how to operate most hand and power tools. Take a moment now to make sure you know how to operate them safely.

Tool Safety Rules

- Use the right tool for the job, and make sure it's the right size for the job. When you use a wrench as a hammer, or a knife as a screwdriver, you risk damaging the tool, the material being worked on and yourself.
- Keep your tools in good condition. A clean, sharp tool is a safe tool. A tool with a greasy handle or dull cutting edge can slip and cause injury.
- Learn the correct way to use a tool. There is typically one right way — and many wrong ways — to use any tool. Don't assume you'll know how to use a new or unfamiliar tool correctly. If you don't know, ask!
- Follow common-sense tool rules. Always cut away from yourself. Pull on a wrench; don't push it. Never modify a tool to increase its leverage or force.
- Use tools thoughtfully, with awareness and patience. Don't rush, don't daydream, don't horse around.
- Carry and store tools safely. Carry tools with the sharp parts pointed down and away from you. Store tools in a clean, dry place to keep them free of grease, dust, and rust.

Play It Extra Safe With Power Tools

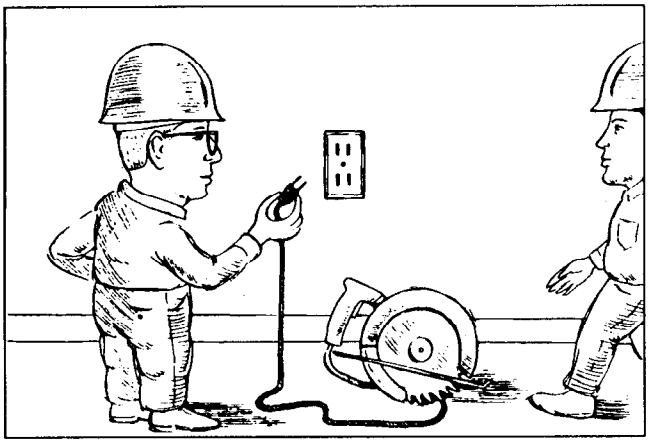
Power tools make it possible to do many tasks quickly and efficiently. But because they use electricity and have fast-moving parts, you must exercise caution when using them. In addition to standard safe tool practices, follow these tips when working with portable power tools:

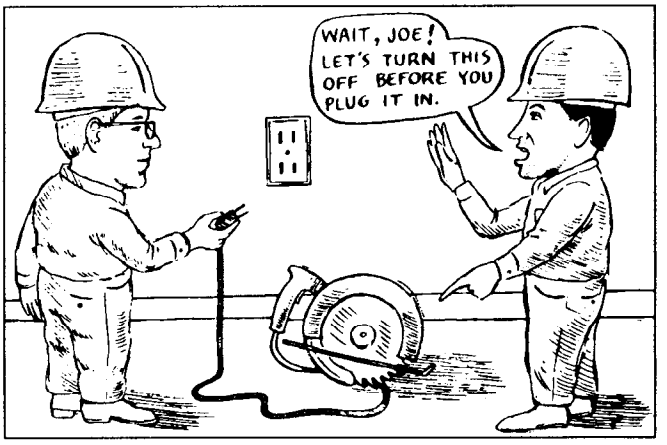
- Dress for safety. Remember, your hands and eyes are your most important tools. When you use saws or grinders, wear protective clothing to prevent cuts and burns. Always wear safety glasses when there is danger of flying wood, metal or particles.
- Inspect and test. Before you use any power tool, check it for broken parts or loose bolts. If you're using a tool with a sharp edge, use a scrap of wood — not your fingers — to test its sharpness.
- Start from "off." Before plugging in a power tool, check the power switch to make sure it's in the "off" position. It's dangerous to plug in a tool when the switch is "on." When you are through, be sure the tool has stopped before unplugging it or putting it down.
- Prevent shock. Be sure your tool is properly grounded and double-insulated. Keep cords away from heat, sharp objects, and chemicals that could damage their insulation. Keep your work area dry. If you must work in a wet area, keep the power cord clear of wet surfaces or use a ground fault circuit interrupter (GFCI).

Put Your Tools To Work for You

Hand and power tools are designed to work for you and make your job easier. When used properly, they will help minimize errors and maximize safety.

(Source: ©1991 PARLAY INTERNATIONAL 1200 041)





Selected References

All of the following can be obtained directly from the source given.

Journal of Management in Engineering (ASCE)

This bimonthly issue from ASCE provides timely articles on management issues confronted by the practicing engineer. Contact ASCE at 1-800-548-ASCE (2723) to subscribe.

Transportation Planning Handbook (ITE)

The Transportation Planning Handbook, a companion publication to ITE's Traffic Engineering Handbook, is a handy stand-alone reference for the transportation professional involved in the broader issues of traffic engineering and transportation planning. Written for both engineering and planning disciplines, the handbook provides a practical guide. 1992, 525 pages, casebound. Contact ITE, 525 School Street SW, Suite 410, Washington, D.C. 20024-2797. Telephone (202) 554-8050.

Manual of Traffic Signal Design (ITE)

Covers traffic signal fundamentals, including predesign activities, base plan preparation, operational requirements, signal display, design configuration, and traffic signal controllers and detectors. Offers wiring and cabling specifics; guides readers through preparing contractual documents, explains construction supervision, and details the complex subject of signal timing. By James H. Kell and Iris J. Fullerton. ITE/Prentice-Hall, second edition, 1991. 256 pages. Publ. No. TB-OOSA.

Retaining and Flood Walls (USCOE/ASCE)

Technical Engineering and Design Guides as Adapted from the U.S. Army Corps of Engineers, No. 4.

This volume provides guidance for the design and construction of retaining and flood walls. It is intended for retaining walls which will be subjected to flowing water, submergence, wave action and spray, exposure to chemically contaminated atmosphere, and/or severe climatic conditions. Topics covered in this guide include general design considerations, forces on walls, structure stability, foundation analyses, design and construction details, and causes of unsatisfactory performance. List $44, ASCE member $33.

A Compendium of Articles on Residential Street Traffic Control (ITE)

ITE announces its latest addition to the technical compendium series, A Compendium of Articles on Residential Street Traffic Control (ITE, 1994, 141 pp., Publ. No. PP-044, $20 for members, $30 nonmembers, plus shipping and handling). The compendium contains selected articles published in either ITE journal or the Compendium of Technical Papers from the ITE International and District Annual Meetings or ITE Mid-Year Conferences. The articles are organized by the following topics: Residential Traffic Control Policies, Geometric Design and Traffic Control Devices for Residential Streets, Effectiveness of Residential Speed Control Programs, and Neighborhood Traffic Management Case Studies.

Survey Defines Training Needs

By Stan Sanders, NWT^2 Center Training Coordinator

In January, the T^2 Center in conjunction with the Transportation Engineering Education Steering Committee conducted a training needs survey to determine the training needs of the agency personnel we serve. We sent over 600 survey forms to cities, counties, forest service organizations, and others with a request that the surveys get the widest distribution possible to include engineers, managers, technicians and supervisors in the areas of planning, design, maintenance, construction, traffic, and administration.

We received 100 responses, nearly a 17 percent rate (58 from cities, 38 from counties, and the remaining 4 from forest service and other organizations). Respondents were from 38 managers, 33 supervisors, 31 engineers, 20 technicians, and 14 planners. We asked respondents for their area of work and received 34 in maintenance, 35 in construction, 31 in administration, 29 in traffic, and 23 in design. Some individuals indicated more than one position classification as well as working in more than one area.

Respondents were asked about the factors which affect training efforts. Each person was asked to indicate in priority order the most important factors relating to their participating in training. Schedule conflicts rated the highest for individuals participating in training. Fifty-three respondents rated this in the top 5 factors, followed by travel problems (39) and courses not being offered enough, at 38. One-third of the respondents felt that they had no time for training. A desire for a single source to provide training information was indicated 32 times.

The results showed that technical and career development ranked highest as the type of training sought (86 and 55 respectively). Nearly half also wanted a training matrix developed to assist them in career development on a technical level.

We asked the respondents where they currently receive their training. Over half (54) indicated that they take advantage of training offered by the NWT^2 center, followed by in-house (49) and WSDOT training opportunities (48).

As expected most felt that course duration was important and they were most interested in 1-2 day courses (63) or 2-3 day courses (31). We asked them how far they would be willing to travel for training and over 78 percent preferred having training within 50 miles, while 39 percent were willing to travel up to 100 miles. In addition to identifying their preferred location for training, 69 percent chose winter as their first or second choice for the time of year, followed by spring at 48 percent then fall at 41 percent.

The survey separated the types of needed training into 9 general categories. Each category was then divided into specific subjects for a total of 105 subject areas. The respondents were asked to identify their interest in the subject as either high, medium, or low. The subject areas were then weighted based on the greatest need (1 point for low, 2 points for medium, and 3 points for high). The top 25 needed training courses receiving 150 points or more are listed.

The results will be discussed with the Transportation Engineering Education Steering Committee at the next scheduled meeting. The T^2 Center will also use these results as a guide to the type, frequency, and location of training to be provided in the future.

The complete report is available by calling (360) 705-7477.

Top 25 Training Needs

1. Construction Management
2. Asphalt Repair
3. Work Zone Safety
4. Grant Application Writing
5. Paving Inspection
6. Avoiding Tort Claims
7. Storm Water Engineering
8. Drainage Inspection
9. Pavement Rehabilitation
10. Pavement Management
11. Water Quality
12. Overlays/Sealcoats
13. Personnel Supervision
14. Construction Safety
15. Traffic Safety
16. Erosion and Sediment Control
17. Flagging
18. Pavement Design
19. L&I Rules and Regulations
20. Liability/Risk
21. Hazard Elimination
22. Project Documentation
23. Wetlands
24. Equipment Operation
25. Roadside Safety

Opportunities to Enhance Your Skills

For more information or training needs not listed contact Stan Sanders T² Center Training Coordinator at 1-800-973-4496 or (360) 705-7477

Northwest Technology Transfer Center

(360) 705-7386. Call Laurel Gray in the T² Center to register or for current information.

- ❒ **Contract Plans, Specifications, and Estimate (PS&E) Preparation, Transmittal, and Review (A4J).** April 19-20, April 26-27, Seattle. For engineers and technicians from local agencies, consultants, and WSDOT involved in the preparation, transmission, and review of PS&E. A basic knowledge of PS&E/Contract preparation is recommended. Course covers the preparation of contract plans, special provisions, estimates of cost, PS&E revisions, addenda, and contract writing based on the WSDOT Plans Preparation Manual and other references. No fee. 16 hours.
- ❒ **Traffic Engineering Fundamentals (BIX).** April 24-26, Spokane. $200. 3 days.
- ❒ **Pavement Condition Rating Workshop (BK9).** April 25-26, Municipal Building, Tacoma. No fee. 2 days.
- ❒ **Bicycle Facility Planning and Design (BIY).** April 27-28, Spokane. $100. 2 days.
- ❒ **Geosynthetics Engineering Workshop (AJP).** June 13-16, Shoreline Center, Seattle. No fee. 3 days.
- ❒ **Traffic Conflict Techniques for Safety and Operations.** June 1-2, Springer Manor, Olympia. No fee. 2 days.
- ❒ **Stream Stability and Scour at Highway Bridges.** June 27-29, Green River Community College, Auburn. No fee. 3 days.
- ❒ **Safety Management System (BKA).** July 18-19, St. Placid, Lacey. No fee. 2 days.

Washington State Department of Transportation, Staff Development Training Opportunities

(360) 705-7386. Call Laurel Gray in the T² Center to register or to be put on a wait list.

- ❒ **Electrical-Illumination and Signals (API).** May 9-10, September 20-21, Seattle; May 23-24, Spokane; October 17-18, Tacoma. No fee. 2 days.
- ❒ **Miscellaneous Documentation (ACY).** July 11, September 26, Seattle; September 12, Tacoma. No fee. 1 day.
- ❒ **Bridge Structures Inspection (ACM).** May 23-25, Seattle. No fee. 3 days.
- ❒ **Drainage Inspection (ACF).** October 5, Seattle. No fee. 1 day.
- ❒ **PCC Field Testing Procedures (ABT).** April 25, May 18, Olympia; June 13, September 7, October 11, Seattle. No fee. 1 day.
- ❒ **Asphalt Paving Inspection (ACB).** September 14, Tacoma; April 20, June 8, Seattle. No Fee. 1 day.
- ❒ **Excavation and Embankments Inspection (AC3).** June 1, July 19, September 14, Seattle; September 19, Tacoma. No Fee. 1 day.
- ❒ **Nuclear Gauge, Operator Qualification (ALG).** April 25, April 26, July 12, Seattle; June 6, Tacoma. No Fee. 1 day.
- ❒ **Nuclear Gauge, Embankment/ Surfacing/Pavement Applications (ANQ).** April 19, June 7, Tacoma; April 27, July 13, Seattle. No Fee. 1 day.
- ❒ **Nuclear Gauge, Overview for Supervisors (ANE).** April 20, Tacoma; May 3, Seattle. No Fee. 4 hours, a.m.
- ❒ **Worksite Traffic Supervisors Seminar (A42).** May 2-4, Olympia, July 18-20, Yakima; October 3-5, Seattle. $225. 3 days.

Department of Labor and Industries Consultation and Education Program *(206) 956-5451*

The following is a listing of free L&I classes scheduled through June 1995. Call L&I for a complete list and to schedule participation.

- ❒ **Accident Investigation.** April 19, Everett; May 3, Bellingham; June 7, Mount Vernon; April 20, May 16, June 20, Tukwila; May 11, Tacoma; June 20, Aberdeen; June 13, Spokane. No fee. 3 hours.
- ❒ **Accident Prevention Programs.** May 23, June 20, Everett; May 17, Bellingham; April 25, May 30, June 27, Port Angeles; May 2, June 1, Spokane; May 2, June 6, Tacoma; June 22, Tukwila; May 17, Tumwater; April 27, June 27, Vancouver; June 6, Wenatchee. No fee. 8 hours.
- ❒ **Bloodborne Pathogens.** May 23, Bellingham; April 20, June 20, Seattle; June 28, Tacoma; June 23, Tumwater; June 1, Spokane; June 29, Vancouver. No fee. 3 hours.

- ❒ **Confined Space.** May 25, Mount Vernon; May 10, Tukwila; June 20, Bremerton; May 3, Pasco; June 7, Yakima; June 13, Spokane. No fee. 3 hours.
- ❒ **Excavation and Trenching.** May 9, Everett; May 4, Tukwila; June 13, Tacoma; May 7, Tumwater; April 20, June 15, Vancouver; May 3, Walla Walla; June 8, Spokane. No fee. 4 hours.
- ❒ **Fall Protection.** May 16, Bellingham; June 7, Everett; May 18, Tukwila; May 19, Bremerton; May 30, Tumwater; June 1, Vancouver; May 4, Spokane; June 15, Ephrata; May 3, Walla Walla; April 27, Wenatchee. No fee. 4 hours.
- ❒ **Hazard Communication.** June 1, Mount Vernon; May 24, Tukwila; May 23, Tacoma; May 20, Vancouver. No fee. 3 hours.
- ❒ **Introduction to Ergonomics and the New Voluntary Guidelines.** June 8, Tukwila; June 8, Mount Vernon; June 14, Tumwater; May 17, Wenatchee. No fee. 4 hours.
- ❒ **Lead in Concentration.** June 22, Spokane. No fee. 3 hours.
- ❒ **Lockout/Tagout.** May 24, Mount Vernon; May 16, Tacoma. No fee. 2-3 hours.
- ❒ **Office Ergonomics.** June 6, Everett; May 4, Tukwila; May 17, Vancouver; June 22, Wenatchee. No fee. 2 hours.
- ❒ **Return-to-Work Programs Make Sense.** April 26, Bellingham; June 28, Everett; May 17, Mount Vernon; May 10, June 21, Tukwila; June 15, Bremerton; June 8, Port. Angeles; May 18, Tacoma; May 9, Long Beach; June 14, Longview; May 31, Tumwater; May 18, Vancouver; June 8, Ephrata; May 18, Kennewick; April 26, Okanogan; May 2, June 29, Wenatchee; May 9, Yakima. No fee. 3 hours.
- ❒ **Supervisor's Guide to Loss Control.** May 31, Bellingham; May 10, Everett; June 22, Bremerton; May 11, Tacoma; June 8, Aberdeen; April 20, Vancouver; June 13, Kennewick; April 27, Moses Lake; May 16, Okanogan; June 28, Wenatchee; June 6, Yakima; May 18, Spokane. No fee. 3½ hours.
- ❒ **Workers' Compensation and the ADA Connection.** April 24, May 17, June 15, Tumwater; April 27, Vancouver. No fee. 3 hours.
- ❒ **Workers' Comp: Who and How to Report.** June 20, Bellingham; May 11, Everett; June 6, Bellevue; April 20, Seattle; May 23, Tukwila; June 15, Tacoma; May 10, Aberdeen; June 7, Vancouver; June 20, Kennewick; June 5, Moses Lake; April 24, Okanogan; June 14, Wenatchee; June 14, Yakima. No fee. 3 hours.

Law Seminars International
(800) 854-8009, Fax (206) 567-5058

- ❒ **Transportation and Land Use; Planning and Financing.** April 27-28, Hilton Hotel, Seattle. $495, $445 for two or more from same agency, government rate $415. 2 days.

Computer Programs

The following computer programs are available without charge by sending a formatted high density diskette for each program requested to: WSDOT TransAid, NW T^2 Center, P.O. Box 47390, Olympia, WA 98504-7390. The files will be copied onto your diskettes and returned to you.

- ❒ **HyperCalc.** A shareware utility for converting between metric and English units. It runs on PC microcomputers operating with Microsoft Windows. Developed for Utah DOT, by Pallas Informatics, Inc., Logan, Utah.
- ❒ **APWA CADD Symbol Standards and Menus.** A public domain program of standard Autocad symbols developed by the Washington Chapter of APWA for use with Autocad release 12.

Plan to Attend

The Annual Joint Conference of the East and West Washington Association of County Road Supervisors

May 3-4, 1995

May 2 — Heavy Equipment and Truck Skills Roadeo

Wenatchee
Westcoast Hotel and Convention Center

Contact *— Will Kinne, Pierce County Road Maintenance Supervisor, (206) 596-2953 or Bud Cave, Maintenance Manager Clark County, (360) 699-2446*

A newsletter of the Local Technical Assistance Program (LTAP)

Issue Number 46, Spring 1995

Bulletin

The Technology Transfer Center (T^2) Program is a nationwide effort financed jointly by the Federal Highway Administration (FHWA) and individual state departments of transportation. Its purpose is to translate into understandable terms the latest state-of-the-art technologies in the areas of roads, bridges, and public transportation to local highway and transportation personnel.

Any opinions, findings, conclusions, or recommendations presented in this newsletter are those of the authors and do not necessarily reflect the views of WSDOT or FHWA. All references to proprietary items in this publication are not endorsements of any company or product.

Washington State Department of Transportation
TransAid Service Center

U. S. Department of Transportation
Federal Highway Administration

Northwest Technology Transfer Center
WSDOT/TransAid Service Center
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